PERSONNEL

Journal

Published by

Personnel Research Federation

Volume 16 *Number 10*

Contents for April, 1938

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PERSONNEL JOURNAL. Published monthly (except July and August) from January to December. Publication office, MT. ROYAL AND GUILFORD AVES., BALTIMORE, MARYLAND. Editorial and General Office, Engineering Societies Building, 29 WEST THIRTY-NINTH STREET, New YORK, N. Y. 75¢ a copy. $5.00 a year in the United States and countries within the postal union; $5.50, countries outside the postal union. Entered as second-class matter at the Post Office at Baltimore, Md., under the Act of Congress, March 3, 1879. Copyright by the Personnel Research Federation, New York, N. Y.

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Does this happen in your plant?

Badge remarked that there was hisself and many other of the boys in the maintenance department who could offer valuable suggestions as to cut repair costs or improve the job, but due to the manner in which the foreman received such suggestions the men have to remain silent as they are given the impression they are paid to do as told and not to try to run the job.

The entire chain on #4 overhead conveyor was removed, much to the surprise of most all the men working on the job just to change the trolleys and the men feel that a lot of unnecessary work was done as it all could have been done without removing the chain.

Badge was heard to remark that one had little or no chance to progress by ability in the maintenance department, because it seemed to be a proven fact that the friends of the bosses got all the good jobs and yet the boys are content to stay on without even offering a protest and there is one way in his opinion to help remedy this and other causes of dissatisfaction and that is to become affiliated with some outside labor party and then some of this could be forced to be changed regardless, as the company is, as everyone knows, "afraid of organized labor."

Extract from Spotter's Report.

Professor Elton Mayo and Other Industrial Psychologists have Studied the Informal Social Activities of Workers in the Electrical and Railroad Industries, Among Others. Here is a Case Study from the Automobile Industry.

Informal Organization

INTER-ORGANIZATION LETTER

Chevrolet Motor Company

EXHIBIT No. 672 of the La Follette Committee Report (Part 6) is a copy of a letter from Mr. F. F. Corcoran, Personnel Director, Chevrolet Division, Flint, Mich. to Mr. M. K. Hovey, General Superintendent of the Motor Division on November 4, 1935. It is reproduced in full.

Mr. Corcoran, upon request of Senator La Follette, made a special check, and reported that none of the workers concerned had been discharged.

For your information, we quote from recent reports:

"It has been noticeable lately that a number of men are now wondering what progress is being made by certain organizations and it would be but a simple matter to get the former members to reinstate at this time, if an organizer would work on them. Among the men who have been inquiring about it of late is Laney (Lovie Laney, #469537) an old member, who is now asking what the organization is doing about the laying off of so many men, and although he does not belong at present, claims if there is an activity, he will rejoin."

"Employee 556558 O'Brien (#556-558 is Jay S. Hunt; there is an Elmer O'Brien #556565) was overheard in conversation to say, 'If the men get smart we can still hold the production down. What we want to do now is on one night shift run around 126 shafts and on the next night run around 120. Any man who runs over 124 every night is only cutting his own throat.'"

He went on to say that it was pos-

sible to run around 140 shafts in a nine hour shift, and when someone asked if the finish or the cams would be as good on this number, he replied:

"It wouldn't be any different because the men have been going at the same speed as long as I can remember. I always run around 72 shafts before supper and then loaf around during the second half of the shift. When we only had to make 118 I used to be through work around 11:45 P. M. We just stood around talking then, for the foreman didn't care what you did as long as you had your production out."

"Haley (John Haley, #444171) went through the department today to take up a collection for the benefit of one of the employees who is in jail charged with drunk driving. One of the employees was heard to say that Oscar Berggren (#444161) was taking up a collection in the main tool room; that this same offender had appealed his case when it first came up and $60.00 had been collected to get him out on bail, and had since left his wife and children, and that he for one was not going to contribute. He added he understood the offender had lost his job."

"Employee 556559 (William C. Johnson) was overheard remarking this afternoon that his machine needed repairing but the foreman would not see to it that the repairs were made; from his comments it would seem that he was burning cams. He said the foreman contended that it was the manner in which he was operating the machine which was causing the trouble, and when 559 (Johnson) challenged the foreman to work the machine, the latter refused and finally got someone to fix it. Now 559 (Johnson) is having no trouble."

"In the camshaft department #556, the men on the first shift have their coats and hats on and are away from the machines at 3:25 P. M."

"Employee #556046 (Harry A. Sines) in conversation, was heard to say that he had completed his production by 2:45 P. M., and that he loafed the forty-five minutes left before he quit work at 3:30 P. M."

"At lunch time the majority of the men had completed from 68 to 70 camshafts and in checking the sheet, it was evident that the other men had the same number. The check-up was made after the final pick-up had been made by 556594 (Leon D. Witham, transferred 10–30–35). When one of the employees had ten completed shafts, and when 594 (Witham) took only two of them, he asked the reason, to which #594 replied:

'You have turned in 62 and that's enough.'

The other was heard to ask, 'Why, what difference does it make as long as I only get 124 in the nine hours?' and #594 answered, 'Well, last night they picked the sheet up on me at supper time and if a man has 66 or 70 shafts turned in for the first half of the shift they will expect you to turn in the same amount for the second half so we leave the shafts until after supper, just in case some-

body should check the sheet and find out what the men really are doing.' "

"There was considerable discussion among the employees of the plant about production, which conversation started before work this morning and continued throughout the entire day. The discussion was interrupted by the foreman during the lunch period, but was resumed again in another location in Plant 5. The operator on machine 8005 was heard to say that the men had no cause to complain because they had in the past run the production too consistent.

'We brought it on ourselves and you know it,' he remarked. 'We gave them 118 shafts every day, regardless of the time we fooled around and we did it day after day; then they asked for 124 shafts a day and like a lot of d—— fools we ran that many. I figure that is where we made our mistake. When they asked for 124 shafts we should have run around 120 and told them that we couldn't get any more. The Company has us right where they want us. They know that anyone of us can get better than 130 shafts and that is the reason for their making us work the full nine hours. There isn't any use of turning 124 each night because Bill is watching the department and if we don't do better than that there probably will be a new crew put on the job.'

This man also stated that the men would get through work from one to one and a half hours early and that instead of staying at their machines they would leave the department. He further said that he had been expecting something like this to happen for a long while because of the manner in which the men killed time in front of the foreman. He said the men should not have completed any more shafts than one-half of the required production as he claimed that the 'bosses' were through the department, making a check-up.

'At supper time the list would show that we all had turned in sixty-two shafts, but we would have six and eight more laying in the racks beside our machines. We didn't stop to think about a check-up showing that we were running nearly 140 shafts. It is too late now to do anything about it. All I can say is that we are sure a bunch of suckers.'

Employee 556559 (Wm. C. Johnson), one of those who joined in the conversation, said he would not give the Company any more than 124 shafts for the shifts, and when he asked what was to be done about Friday night, employee 556594 (Leon D. Witham, transferred 10–30–35, to #461665) answered, 'There isn't much we can do.'

'I think we should drop back to 118 shafts, as we only work eight and a half hours, replied #559 (Johnson).

'You fellows had better stop fooling around,' machine operator #8004 was overheard to advise. 'I'm telling you that you are not kidding the old man. You'd better knock the production out and forget about trying to set an amount for each man to run.'

An argument between machine op-

erator 8005 and 556559 (Wm. C. Johnson) followed, the latter stating the men should not run above 118 shafts on Friday, while the machine operator stated that the men had better run what they could and stop arguing about it. The argument became quite heated and it stopped when the machine operator #8005 stated that he intended to run whatever he could get, regardless of what the other men in the department did. #556594 (Witham) said #559 (Johnson) had no complaint coming as the latter's being on the regrind was a great deal easier than the regular grinding, as there was no roughing to do.

During the shift 556559 (Johnson) talked a great deal to various employees, spending about twenty minutes in attempting to make a bet with one of the men on football; according to another of the employees, #559 lost approximately seven dollars last Saturday betting with other employees on bets he made in the plant throughout the week.

At approximately 7:50 P. M., the operator on machine #8014 stopped his machine washed his hands, and left the department, not returning until after the lunch period was over. At exactly 12:45 A. M. this same employee took his tools from the machine and walked across the department to put them in his tool box. He returned to his machine and shut the machine down completely, even shutting off the air on the machine. He then stood around until quitting time, at which time he was washed and had his coat under his arm.

Approximately every hour employee #556594 (Witham) would ask the operators how much production they had completed. Any information that he received was given to other employees, evidently so that each man would know what the other man was doing.

One of the employees, known only as 'Shorty' was observed suffering from a severe nose-bleed before starting to work. Shorty was heard to say that he had been to a doctor for a sinus treatment before going to work, and said that the emery dust didn't do him any good, and it is believed that the foreman should not have permitted this man to work in his present condition, as his nose bled practically the entire shift."

"Employee 535527 stopped to talk to one of the employees who was supposed to be working. These two men stood by the day man's machine and talked from approximately 3:00 P. M. to 3:30 P. M. During this time the day man did not operate his machine, and 535527 (Isaac E. Rockwood) was smoking a cigarette."

"As employee 556594 (Leon D. Witham, transferred 10–30–25 to 461665) made his first pick-up trip throughout the plant, he was heard to inform one of the employees that the men in the department had decided not to turn in more than 124 shafts for the nine hour shift, and he cautioned him not to turn in more than that.

At supper time the entire de-

partment got together and checked each other's production. Employee 556559 (William C. Johnson) did most of the talking. He said he is working on the re-grinding machine and that he had been reprimanded by the general foreman for talking to another employee during working hours, that he intended to talk to whomever he pleased and whenever he wanted to and no foreman was going to stop him. He explained that he had been talking to the oiler for about 20 minutes before the general foreman broke up the conversation. No. 559 turned in 122 shafts for nine hours and stated the Company could get someone else to take his job if they didn't like the way he was handling it.

During the shift after lunch a check was kept on this employee and he was away from his machine on three different occasions. The time lost was approximately thirty minutes. On one occasion he was observed talking to an inspector and on the other two occasions he was out of the department. During the entire shift this man lost approximately one hour and a half, mostly caused by fooling around.

Operator on machine #8007 at supper time remarked that he had completed 68 shafts but had turned in only 60. The other eight shafts were in the rack, covered up with rough stock. Later, it was noticed that he stopped work at 12:20 A. M., and between that time and 1:00 A. M. he ground only four shafts. Two of these shafts are left in the machine for the day man.

Operator on machine #8009 was heard to say at supper time that he had completed 74 camshafts. At approximately 1:00 A. M. when the check-up was made, he turned in 124 shafts. It would appear that if an employee can run for the first 4½ hours 74 shafts, he should be able to come close to the same amount of production for the last 4½ hours of a shift. In this man's case he ran only 50 shafts after the supper hour. He did not have any machine trouble nor did he have to change a wheel. The difference in production is caused by the men's determination that they will not go over 124 shafts.

Employee 556545 (Milton Struble) was heard to say that he intended to buy one of the new Fords next Saturday and when another employee asked why he did not buy a Chevrolet replied that he knew how Chevrolets were built and would not advise anyone to buy one."

The Minnesota Test was Most Advantageous Since it Provided Better Predictions, was Easier to Administer and Score, and was Less Time Consuming.

Clerical Tests *in* State Reformatory

By W. M. Hales
Minnesota State Reformatory for Men
St. Cloud, Minn.

The study reported here is one of a series of investigations of occupational ability made during the last three years in the Minnesota State Reformatory for Men, St. Cloud, and summarizes the results of a survey and study made of 129 inmate clerical workers and students with the Minnesota Vocational Test for Clerical Workers and the Thurstone Examination in Clerical Work.

Numerous positions in the institution must be filled by inmate help. There are clerical positions of various kinds, and also a considerable number of inmates receive training in the commercial department.

Placement of Inmates

The importance of the proper selection of individuals for such work is obvious, since poor selection results not only in loss in efficiency in the institution through waste of time and materials, but also in an inadequate and faulty adjustment of the inmates themselves.

The aims of the study, therefore, have been first, to obtain objective information concerning the general level of clerical ability of employed and prospective (i.e. student) reformatory clerical workers as measured by tests designed to determine such ability. Second, to determine insofar as possible, the usefulness and predictive value of these tests for reformatory use, and finally, to obtain additional information concerning the tests themselves. It was believed that such information would not only be of interest by permitting comparisons of reformatory men with "outside" groups, but should be of considerable practical value as an aid in improving selection of prospective clerical workers.

As an initial step in the study, a

survey was first made of all the 40 men doing clerical work in the institution.

A survey was then made of all individuals in the institution enrolled in the commercial department. In this group it was possible to make a classification of kinds of clerical work being studied, number of hours of class study, length of time in such classes, etc. This group, consisting of 89 individuals, was finally classified as follows: (1) All-day students (bookkeeping, etc.) (2) Half-day students (bookkeeping, etc.) (3) Typing I., II., III., and IV. (4) Shorthand I., II., III., and IV. (Roman numerals indicate classes from elementary (I) to advanced (IV)).

The educational ability of the two groups ranged from below 7th grade to better than 12th, and in clerical experience from a few weeks of class work to over 5 years office work. The age range was from 18 to 54 years, the average being 24.2 years.

Supervisor Ratings

Having completed the selection of subjects, some procedure was desired which would permit statistical comparisons between the test scores made by the various individuals in the two groups mentioned and their actual work or class performance in the institution.

Although the limitations and defects of the rank order correlational technique were recognized, this method appeared to be the most feasible one for the purpose in mind. The method was employed as follows: Each officer supervising clerical workers was interviewed, given a rating blank, and asked to rate the workers under his supervision in rank order from best to poorest in clerical efficiency. Care was taken to explain in detail to the officers the method of arriving at the ranks, the need for objectivity in making the ratings, and the things to be avoided in making such ratings.

Although the ratings thus secured are probably open to the usual criticism and question as to reliability, it is believed that the rankings in general were as reliable as those usually obtained. In the case of the office workers, the subjectivity of the rankings was probably much greater than for the students in clerical courses, since in the latter, fairly reliable classroom grades and progress ratings were available which could be used in ranking. In every case individuals were ranked only in relation to the respective group in which they worked or studied, and only where there had been sufficient time to observe the individual's ability or progress.

After the officers and instructors had completed the rankings, each class and office group was given the short form of the Minnesota Vocational Test for Clerical Workers and the Thurstone Examination in Clerical Work. The tests were administered under conditions as uniform as possible for all groups and the directions for each test adhered to as given in the manuals of directions.

Test Scores of Inmates

Table I following, shows the average scores, the standard deviations, and the difference ratios of the averages for the two inmate groups on the two clerical tests. Comparisons in terms of "overlapping" i.e. the number and percent of inmate students reaching or exceeding the mean of the office workers, are also shown in the last two columns.

The average scores of the inmate workers exceed that of the students on both parts of the Minnesota Vocational Test and the Thurstone Examination, and the different ratios of the averages are all significant. It will also be noted that in terms of "overlapping," the students are inferior to the workers, the highest percent of the former reaching or exceeding the mean of the latter, being 24.7% on the Thurstone Examination. The comparisons also indicate that the students compare less favorably with the workers on Number checking (Minn.) than on Name checking or the Thurstone. It should be noted, however, that the clerical workers are a highly selected group as regards ability. This is due to the fact that there are not many technical positions for inmates in the institution and individuals of superior ability tend to go into clerical positions even though many have not had prior clerical experience on the outside.

TABLE I

AVERAGE SCORE COMPARISONS AND DIFFERENCE RATIOS OF INMATE CLERICAL WORKERS AND STUDENTS

	N	Minnesota Clerical										Thurstone				
		Number Checking					Name Checking									
		M	S.D.	R*	No.	%	M	S.D.	R*	No.	%	M	S.D.	R*	No.	%
Workers	40	115.3	27.4	3.49			117.5	26.8	4.13			100.1	25.8	4.61		
Students	89	98.9	19.4		16	17.9	97.2	23.6		21	23.6	124.1	30.7		22	24.7
Workers & students	129	104.0	24.4				103.5	27.4				116.7	31.5			

N = number of cases; M = mean; S. D. = standard deviation; R = ratio of difference between mean of inmate workers and inmate students; No. and % = number and percent of inmate students reaching or exceeding mean of workers.

* Computed by formula: $R = \frac{D}{\sigma \text{ diff}}$ where D = difference in averages and σ diff = standard error of the difference.

Inmate Scores and Normative Data

Table IIA following, summarizes the results of average score comparisons made between the inmate groups and normative samples on the Minnesota Vocational Test.[1] Each inmate group is compared with (a) a standard unemployed sample, and (b) three employed samples on both parts

[1] For a description of these samples and the statistical data concerning them, see pp. 23–27, "A Manual of Selected Occupational Tests," Vol. II., No. 3, July, 1933, University of Minnesota Press, Minneapolis.

of the test.[2] (i.e. Number and Name Checking).

The average score of the inmate *workers* exceeds the unemployed sample on both parts of the Minnesota Vocational Test, the difference ratios of the average being significant in both cases. The inmate *students*, however, do not compare as favorably, the average difference ratios being in favor of the unemployed sample. The latter ratios are not, however, significant.

The averages of the three employed samples exceed that of the inmate workers in every instance except two, namely, Sample I Name checking and Sample III Name checking. Similarly, the averages of the three employed samples exceed that of the inmate students in every instance, the difference ratios of the averages being significant in the case of Samples I, II, and III Number checking, and Samples II and III Name checking.

Table IIB following, summarizes the results of another comparison made between the test scores of the inmate groups and the normative data on the two clerical tests. This

TABLE IIA

AVERAGE SCORE COMPARISONS AND DIFFERENCE RATIOS BETWEEN INMATE CLERICAL GROUPS AND NORMATIVE SAMPLES ON THE MINNESOTA VOCATIONAL TEST FOR CLERICAL WORKERS

	Minnesota Number Checking						Minnesota Name Checking					
	N	M	S.D.	R	No.*	%*	N	M	S.D.	R	No.*	%*
Unemployed Sample	255	103.4	30.0				256	102.9	32.3			
Inmate Workers	40	115.3	27.4	2.52**	21	52.5	40	117.5	26.8	3.11**	23	57.5
Inmate Students	89	98.9	19.4	1.61	29	32.5	89	97.2	23.6	1.77	32	35.9
Workers & Students	129	104.0	24.4	.21**	50	38.7	129	103.5	27.4	.19**	55	42.6
Sample I	24	117.1	27.2				24	109.4	32.8			
Inmate Workers	40	115.3	27.4	.25	14	35.0	40	117.5	26.8	1.02**	20	50.0
Inmate Students	89	98.9	19.4	3.07	16	17.9	89	97.2	23.6	1.71	26	29.2
Workers & Students	129	104.0	24.4	2.20	30	23.2	129	103.5	27.4	.829	46	35.6
Sample II	51	131.8	22.3				51	119.3	25.3			
Inmate Workers	40	115.3	27.4	3.09	10	25.0	40	117.5	26.8	3.26	16	40.0
Inmate Students	89	98.9	19.4	8.79	6	6.7	89	97.2	23.6	5.20	20	22.3
Workers & Students	129	104.0	24.4	7.33	16	12.4	129	103.5	27.4	3.69	36	27.9
Sample III	16	115.6	22.6				15	113.2	22.2			
Inmate Workers	40	115.3	27.4	.04	14	35.0	40	117.5	26.8	.603**	18	45.0
Inmate Students	89	98.9	19.4	2.77	16	17.9	89	97.2	23.6	.256	23	25.8
Workers & Students	129	104.0	24.4	1.92	30	23.2	129	103.5	27.4	1.56	41	31.7

N equals number of cases; M equals average; S.D. equals standard deviation; R equals ratio difference of averages.

* Number and percent of inmates reaching or exceeding mean of normative sample.

** Difference in favor of reformatory group.

[2] Data for this comparison was not available for the Thurstone Examination.

comparison is in terms of equivalent letter grade classifications—that is, the number and percent of each inmate group earning scores equivalent to the various letter grades assigned in the normative data. It should be noted that the letter grade classification used for comparison in the case of the Minnesota Vocational Test "employed sample," is only approximate, having been derived from normative data given.[3]

Table IIB above is to be read as follows: On the Minnesota Clerical number checking, 10 or 25% of the inmate clerical workers earned a rating of A; 21 or 52.5% a rating of B; 9 or 22.5% a rating of C, etc. as compared with an unemployed sample in Minnesota. 2 or 5% of the same group earned a rating of A; 3 or 7.5% a rating of B; 7 or 17.5% a rating of C, etc. as compared to a sample of employed clerical workers. Each comparison is to be read similarly for each institution group and each test.

TABLE IIB

LETTER RATING COMPARISONS FOR INMATE CLERICAL WORKERS AND STUDENTS ON THE MINNESOTA VOCATIONAL TEST FOR CLERICAL WORKERS AND THE THURSTONE EXAMINATION IN CLERICAL WORK

	Unemployed Sample										Employed Sample									
	A		B		C		D		E		A		B		C		D		E	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Inmate workers (40)																				
Minn. Nos	10	25.0	21	52.5	9	22.5	0	00.0	0	00.0	2	5.0	3	7.5	7	17.5	26	65.0	2	5.0
Minn. Names	11	27.5	23	57.5	6	15.0	0	00.0	0	00.0	5	12.5	2	5.0	10	25.0	20	50.0	3	7.5
Thurstone**											7	17.5	7	17.5	14	35.0	5	12.5	7	17.5
Inmate Students (89)																				
Minn. Nos	6	6.8	42	47.2	40	44.9	1	1.1	0	00.0	0	00.0	2	2.3	10	11.2	46	51.7	31	34.8
Minn. Names	7	7.9	40	45.0	37	41.5	5	5.6	0	00.0	0	00.0	4	4.5	18	20.2	41	46.0	26	29.3
Thurstone**											2	2.3	6	6.8	25	28.1	20	22.4	36	40.4
Inmate Workers And Students (129)																				
Minn. Nos	16	12.4	63	48.8	49	38.0	1	.8	0	00.0	2	1.5	5	3.9	17	13.2	72	55.8	33	25.6
Minn. Names	18	14.0	63	48.8	43	33.3	5	3.9	0	00.0	5	3.9	6	4.6	28	21.7	61	47.3	29	22.5
Thurstone**											9	7.0	13	10.1	39	30.2	25	19.4	43	33.3

** Data available for employed sample only.

As in the case of the average score comparisons just presented in Table IIA, the equivalent letter rating comparisons shown in Table IIB indicate that the employed inmate workers are somewhat superior to the unemployed sample both in number and name checking on the Minnesota Vocational Test. As will be seen in the table, 100% of the group earn

[3] Minnesota Vocational Test for Clerical Workers, "Manual of Directions"—page 7 Table III, The Psychological Corporation, New York, 1933.

scores equivalent to a letter rating of C or over. This group also compares quite favorably with the normative ratings on the Thurstone Examination, 70% earning a letter rating of C or over. Similarly it will be noted that the inmate students compare much less favorably on both tests, being definitely inferior to the employed samples. However, they do compare very favorably with the unemployed sample on the Minnesota Vocational Test, 98.9 % earning a letter rating of C or over on the number checking and 94.0% earning such rating on the name checking.

general results,[5] showing the range, the average and medians of the coefficients, the coefficients of alienation of the medians (k),[6] and the approximate percent of efficiency of prediction[7] for each of the two clerical tests.

From Table III it will be seen that the rank order coefficients range from −.392 (Thurstone score and ratings of workers in Steward's Office) to +.867 (Minnesota total score and class rankings in Typing IV). It will also be noted that the medians and averages of the coefficients and the percents of efficiency are somewhat

TABLE III

RANK ORDER CORRELATIONS BETWEEN TEST SCORES AND OFFICER'S RATINGS

	Range	Avg.	Med. ρ's	κ of Med.	% of Eff.
Minn. Numbers	−.220 to +.636	.325	.416	.907	9.25
Minn. Names	−.385 to +.839	.376	.448	.893	10.70
Minn. Nos. & Names	−.206 to +.867	.396	.494	.866	13.40
Thurstone	−.392 to +.737	.358	.376	.925	7.50

Test Scores and Officer's Ranking

In making this comparison, rank order correlations were computed between the test scores for each of the two clerical tests and the officer's ranking of ability by the usual method[4] for each officer's group and commercial class. Thus 14 rank order correlations were computed between each part and the total scores of the two tests and the officer's ranks. The number of cases in each group ranged from 7 (Institution Store) to 15 (Shorthand Class IV).

Table III above, summarizes the higher for the Minnesota than for the Thurstone. The medians of the coefficients on the Minnesota are approximately of the same order as the contingency coefficients previously reported between test scores and supervisor's ratings.[8] Likewise, it will be noted that the median and average of the coefficients is slightly higher for the combined score (numbers and names) than for either number or name checking separately.

[4] $\rho = 1 - \frac{6\,\Sigma D^2}{N(N^2 - 1)}$

[5] It is impossible here to consider all of the intercorrelations separately.

[6] Standard error of measurement computed by formula $k = \sqrt{1 - r^2}$ after converting ρ's to r's.

[7] Computed by formula % eff. = 100 (1 − k)

[8] Manual of Directions, page 4.

Analysis of Coefficients

A further analysis of the coefficients (not shown in tables) indicates a somewhat higher trend of positive relation between test scores and rankings for the commercial classes than for the office employees. For the latter (office employees) the coefficients range from −.392 (between Thurstone score and Steward's office rank) to +.608 (Minnesota total score and Institution Store ranks). For the former (commercial students) the range was from −.385 (Minnesota Clerical Names score and Shorthand IV ranks) to +.867 (Minn. total score and Typing IV ranks). The median coefficients (total scores and rankings) were +.332 and +.444 respectively. It is possible that this higher trend for the commercial groups may be due in part to the more objective basis used in ranking as was mentioned earlier in the discussion of "Method and Procedure."

Another rather definite trend noted (not shown) is that the coefficients with two exceptions, are higher (positively) in the case of the more advanced commercial classes on both of the clerical tests than for the elementary. This would appear to be rather significant.

Finally, although the correlational results here presented must be interpreted with caution, the data as a whole does not indicate a high degree of predictability between test scores and clerical performance rankings, since some of the obtained coefficients are of a negative order, and the median coefficients and percents of efficiency are relatively low in the case of both tests. Some of the individual coefficients are, however, sufficiently high positively to be quite suggestive with reference to the practical use of the tests in the institution. For example, the coefficients between the Minnesota combined score and officer's rankings in five different comparisons made were above .6, being .608 (Institution Store) .622 (All-day commercial students) .758 (Typing II) .809 (Shorthand III) and .867 (Typing IV).

Intelligence Quotients and Test Scores

Since individual intelligence quotients (Kuhlmann-Binet) are available for all admissions to the institution, product moment correlations were computed as a matter of interest between intelligence quotient and clerical test scores for the entire group. Table IV following, shows the average scores for the clerical tests, the average and median I.Q., the obtained coefficients, and the probable errors of the coefficients.

The obtained coefficients are of about the same order for the three comparisons made between intelligence quotient and the Minnesota test scores. In general they are quite similar to those already reported for the same comparisons.[9] As will be noted, the coefficient is somewhat lower for number checking than for name checking or for combined number and name checking. It will also

[9] See page 4 "Manual of Directions, Minnesota Vocational Test for Clerical Workers, the Psychological Corporation, New York City, 1933.

be noted that the coefficient for the Thurstone is somewhat higher than for the Minnesota. This might be expected in view of the fact that some parts of the latter appear very similar in type to recognized intelligence test material.[10]

Intelligence Quotient and Officer's Ranking

This comparison was included in the analysis for the obvious purpose of determining, insofar as the method permitted, the relative predictive value of intelligence quotients for clerical performance. As in the case of the clerical test scores, rank order correlations were computed between I.Q. rank and officer's rank of clerical ability for each commercial class and office group. The following results were obtained:

The range of the coefficients was found to be from −.750 to +.858, with a median of +.205, an average of +.245, the median coefficient of alienation being .970 and the median percent of efficiency being 2.92. In four instances the coefficients were found to be of a negative order, being −.750, −.212, −.120, and −.026. In three instances, however, they exceeded +.70, being +.858 (Shorthand III) +.846 (Commercial students half-day) and +.773 (Typing IV).

In general, these results indicate a lower predictive value for the intelligence quotient than for the clerical test scores. As in the case of the clerical test scores, similar trends, however, were noted, i.e. the trend of the coefficients is somewhat higher positively for the commercial classes than for the office groups. Similarly, there is some tendency, but not as marked, for the coefficients to be higher in the case of the more advanced commercial classes than for the elementary.

TABLE IV

COMPARISONS BETWEEN INTELLIGENCE QUOTIENTS AND CLERICAL TEST SCORES

	N	Avg. Score	Avg. I.Q.	Med. I.Q.	r	P. Er
I.Q. and Minn. Numbers	129	104.0	113.8	101.0	.384	.050
I.Q. and Minn. Names	129	103.5	113.8	101.0	.483	.045
I.Q. and Names & Numbers	129	207.5	113.8	101.0	.475	.046
I.Q. and Thurstone	129	116.7	113.8	101.0	.578	.039

Scores on Two Tests

Finally, as a matter of interest, the scores on the two clerical tests were compared.[11] Product moment correlations were computed between each part and the combined scores of the Minnesota and the total scores on the Thurstone Employment Test. The averages, standard deviations, and product moment r's are shown in Table V following.

From Table V it will be seen that the highest positive relation found is between the Thurstone total score

[10] Test parts 3, 4, and 8 particularly.

[11] In so far as the writer has been able to determine, the two tests have not been so compared before.

and the Minnesota combined number and name checking. There seems to be no obvious reason to explain this finding. One possibility, of course, is that it may be due to certain factors or conditions resulting directly from combining the scores of the two parts of the Minnesota Test. It should be noted that the standard deviation is slightly lower for the combined scores than for the separate parts of the test.

It is also not apparent why the coefficient should be lower in the case of number checking than for name checking. It would seem not to be due to differences or similarities in the contents of the parts of the test as compared with the respective parts of the Thurstone test.

Finally, the coefficients, even in the case of the combined Minnesota score and the Thurstone, are not sufficiently high to permit individual score predictions. It is interesting, however, that two tests of seemingly different content exhibit the degree of relationship found.

TABLE V

COMPARISONS OF SCORES OF THE CLERICAL TESTS

	N	Minnesota		Thurstone		r	P. Er
		Avg.	S.D.	Avg.	S.D.		
Minn. Nos. & Thurstone	129	104.0	24.4	116.7	31.5	.360	.051
Minn. Names & Thurstone	129	103.5	27.4	116.7	31.5	.558	.040
Minn. Nos. & Names Comb. & Thurstone	129	207.5	23.5	116.7	31.5	.610	.037

Discussion

The data just presented would seem to indicate the following: 1) That the Minnesota Vocational Test and the Thurstone Examination distinguishes quite definitely between inmate commercial students and clerical workers in the Reformatory; 2) That the inmate clerical workers studied are somewhat inferior to employed normative group samples on the clerical tests; 3) That they are not, however, as inferior as might have been expected in view of the general occupational training handicap so often found in corrective institutions; and 4) That although the data just presented does not warrant positive conclusions concerning the predictive value of the clerical tests studies, they do seem to indicate the undesirability of using them uncritically in institution selection. Likewise, it would seem that the use of intelligence quotients alone in predicting clerical efficiency or progress would be hazardous.

As to the respective merits of the two tests themselves, the advantages would seem to favor the Minnesota Vocational Test. In addition to providing a somewhat better prediction, the latter was also found easier to administer and score, less time consuming.

All the Employees of a Company, from General Manager to Janitor, Should Form a Single Social Organization, Having a Universally Accepted Objective or Purpose.

Psychology *of* Cooperation

By Charles S. Slocombe
Personnel Research Federation

Some time ago a company set up a simple piece of machinery by which foremen rate workers, on forms devised by unions, it being agreed that workers are to see and accept their ratings as fair. The rating form is then signed by the foreman and the shop steward.

The psychological results and implications of this simple plan are of value for all industry.

Live Interest

There is a new buoyancy and a live interest among the men in the plant which is absent from many industrial companies today. What seems to have happened is this. Prior to meetings with union agents which started the plan, the men in the plant were, so to speak, just working for wages. They had no special interest in their work, and there was no leadership or lifting force to give their lives inside the plant purpose, and particularly no force drawing them together as social human beings.

Under such circumstances where men are gathered together in the absence of purposeful social activity, they tend to create activities to feed their starving appetites. The results then are twofold. Cliques and gangs form and develop jealousies and animosities, and rules for the protection of their groups, and to give their groups something to do. The conflicting interests that develop distract the attention of the members from their work, and also make impossible flexible and efficient operations in the plant.

Because the married men with families, and those more stable are able to gain their satisfactions, social and otherwise in their home activities and their hobbies and recreations, they do not feel the same need for social interests in the plant as the more unstable elements in the work

force. As a consequence the more unstable elements assume leadership of the plant groups, and tend to become influential in union affairs, and to take the leading part in discussions in union meetings.

Unstable Workers

Their main preoccupation there, apart from quarreling with other factions in the union is discussing the poorness of their lot, their grievances, and seeking ways to increase their pay, their leisure and the convenience of their working conditions. They gain a magnification of their importance by arranging and attending meetings with the high officials of the company. But even if they get what they ask for they are not satisfied; rather it whets their appetite for more.

The reason for this of course is the fact that being the more unstable unsatisfied employees, their real lack is some stabilizing, integrating force in their lives. This must be provided for them.

It would seem that in the Company some such a demoralized situation had gradually come about through allowing the thing to drift.

Management put it up to the men that their work was unsatisfactory, and that they should improve it, and aid in running the plant efficiently. This had its immediate effect upon all the employees, and was accepted by them with reasonable grace, because that was what they really wanted to do anyway if given a lead.

They became interested in the idea that they as union men should say what the qualifications of a good workmen are, and upon what basis his work should be judged. So discussions in union meetings, by no means devoid of heated discussion, and differences of opinion, turned away from bellyaching about grievances to the more satisfying consideration of themselves as good workmen with a craft pride.

One immediate effect of this of course was that the more able and stable workmen who, disliking the bickering at union meetings of the men with "a chip on their shoulder," had refrained from attending, now found some real interest in the meetings, and not only attended, but took a leading part in the discussions and in the affairs of the unions.

Six Months Education

The union consideration and discussion of cooperation and ratings took place over a period of six months. During the whole of this time the men were thinking in terms of, "What is a good job? What qualifications should a particular craftsman have?" and so on. This thinking and arguing and talking obviously served several purposes.

It gave the men an interest in something which from a social and plant point of view might be called constructive. And in so far as it is psychologically true that a man has only so much mental energy to devote to various matters, the occupancy of his mental energy by this constructive element meant that he had

less mental energy to devote to disruptive matters.

The way in which this matter of good workmanship was taken hold of by the men indicated that it made an appeal to something pretty fundamental in their characters. The previous submergence of this workmanship factor under a scum of quarrels, bickerings and dissatisfactions was probably due to the lack of leadership. What is really being pointed out is that these men, and perhaps most workman do not have to be urged and worked up to a pitch of enthusiasm and have injected in them an urge to do good work. They have the urge all the time, but it is being blocked back by other forces which should be cleared away.

What was going on during these six months was a process of clearing away this scum. The end result was a set of rating forms and an agreed procedure. That was an important result, but the releasing and self educating process was equally important.

All over industry today we have a variety of instruments being developed and installed for smoothing labor relations and improving personnel practices. These instruments are being given the credit for the improvements which follow. But is there not a wrong emphasis?

General Foods Policy

For example, General Foods Corporation published its company policy in April 1937. It is said that the essential soundness of this policy and its acceptance by all concerned is the thing that has kept peace in the company.

One of the reasons why the policy is said to be so good and widely accepted by employees is the manner of its makeup. After being drafted it was discussed backwards and forwards by committees all the way from the Board of Directors to the foreman. It went up and down the line, with amendments and improvements no less than seven times, before the final edition was printed. This must have taken almost a year.

The final policy is important. Yes. But we suggest that the constructive educative process that was going on through the organization was the thing that improved General Foods labor relations and laid the base for their present peace.

This distinction between process and result and an understanding of the psychology that is going on, and what is really producing an improvement in labor relations is vitally important. For if we have a wrong explanation for a good result we are liable to make a wrong application next time and upset things, or we are liable to rest content, and allow things to drift back into a state of conflict.

For example, if General Foods did not realize that its sound labor relations are due to the carry over effect of the educative process that went on while its policy was being formulated, and thought that the policy itself would hold the situation it is liable to run into trouble. It will find the policy gradually being dis-

regarded by supervisors and men, and a snarl developing.

Where Is That Policy?

It is quite probable, for instance, that if one went into a superintendent's office in one of General Foods Plants and asked to see the policy, that the Superintendent would have to dig down among the discarded papers in the bottom of his desk to find it, and that he hasn't looked at it since he first got it. As time goes on he inevitably will depart from the policy further and further. As the result of his constructive work in thinking over and helping to develop the policy recedes into the past.

Editors note: There not being a General Foods plant handy, we tried this on a telephone official. He almost had to tear his office apart to find a copy of the Company policy.

What General Foods will probably do then is recognize the fact that the process of developing the policy was important, and seek some other instrument or objective which will need a process of constructive thinking to develop over a period. It is probable that if they dug up the policy and started having meetings about it again they would get little response. It would have as much appeal as yesterday's left over warmed up buckwheat cakes.

In view of the fact that they have but recently set up an industrial relations department, General Foods have numerous personnel techniques to install—better hiring methods, job classifications, ratings, etc. These plans, if installed with a view to the educative effect of the installation of each, can serve to keep the spirit of the organization growing and lively.

How can Interest Grow?

The company with the rating plan developed in the unions over a period of six months into a rating of each workers work, has seen its men and their supervisors go through an educational process which has lifted the spirit of the group up from its previous dull lifelessness. The periodic evaluations now taking place are without question carrying along the generated spirit nicely but as time passes and the effect of the educative process fades away it seems unlikely that the scheme can hold it up.

This does not mean that the plan should be scrapped, but that it should be relegated to its proper place as a personnel instrument, controlling work standards just as temperature and pressure readings are continually taken to check furnace operations. And some other plan must gradually be developed to maintain interest.

One question asked was whether foremen are getting into the habit of saying to a man "If you don't do your work properly I will rate you low at the next evaluation." In other words were they using the evaluation as a club. The replies to this question were that the foreman were not doing so.

In the operating departments the supervisors have set up statistical controls of work performance and are attempting to get men interested in

maintaining certain standards. For example in the matter of continuity of furnace operation, the men have been brought to be interested in doing all that is necessary to prevent the current going off or some other thing happening to cause a stoppage. This necessitates their being actively interested in preventive means. Avoidance of waste is another thing with statistical controls which are used to measure the effectiveness of the men's work, and to rouse their interest in a desirable objective. Less success seems to be obtainable in such matters as maintaining constant or desired pressure or temperature in processing. Waste or stoppages are events that can be seen, but some of these other matters are more remote and intangible in their effects, and it is difficult to maintain standards. This matter requires attention and may develop into the next morale improving phase.

Maintenance Men

In regard to maintenance forces, some months ago it was said that craftsmen in maintenance crews did not show the proper spirit nor as good a one as the operating men. For example on an emergency happening, all the operating men would set to work as fast as possible to set things right. But that insofar as maintanance men were involved they would not hurry themselves, but would just go about making repairs at their usual working pace.

It is said now that since the cooperative plan went in the maintenance men are very much improved, and do bestir themselves a little more to cooperate with the operating crews in emergencies.

An explanation of this difference between the maintenance and operating men points to a possible further extension of the cooperative plan.

The operating men are bound up in their job of getting out production, and stay with that all the time. So any disturbance or interruption immediately stimulates them and makes them impatient of delays. The maintenance men on the other hand move from job to job as they are assigned and have no direct personal interest in their assignment other than to do a competent job as they are trained to do. This is why they cannot be excited in the same way as the operating men.

This seems a very likely explanation of the differences in motivation of these two groups of men. Would it not be possible to develop a plan whereby maintenance men, or some of them at least, could be assigned to the care of certain parts of the operating machinery, to make regular inspections, or receive reports of needed repairs from the operating department, and be responsible for keeping it in order. If this could be worked out it would give these craftsmen some definite and greater motivation than they have at present, and might make possible the setting up of statistical controls, in terms of costs etc., which could be used to raise their efficiency.

Construction Men

With the Construction men there is another distinct possibility arising out of action which they took voluntarily. It appears that a new structure was to be erected. The union asked that bids on this job be in two parts (1) for the supply of materials (2) for the erection. The erection bid was $5400. The union asked that they be allowed to do the erecting, saying that they thought they could do it for less than the bid, and that it would give work for their members. Management accepted their offer, and their shop steward was temporarily promoted to foreman in charge of the work. He picked his own crew from the construction forces.

In spite of adverse weather these men erected the structure for a total cost of $1500. They were intensely interested in the work as it went along, and every day watched their own costs. When the job was finished the shop-steward remained as foreman and went on to some other work.

The men apparently made no demands on the management because they had done this job. But they were very proud of it.

How far their work can be assigned so that this spirit is kept up as a question. Perhaps such exploits should take place only periodically to keep up the interest of the men. If done too often it might overstimulate them.

Ceremonies Provided

Sociologists say that wherever people work together or live together they always set up rules and regulation customs and ceremonies. These are partly to regulate their interrelationships and are essential to the working of the group as an organization, and partly to satisfy their need for drama and feeling of working together. The cooperative plan has utilized these group tendencies in a constructive way.

The repetition of the ratings at intervals provides at such times a sort of ceremony of the dramatic type in which each workman goes in and has a confab with his foreman and shop steward. As his turn comes each man participates in this little drama, and the others all have a sense of participation in their discussions of the results of each man's rating, and the attendant explanations.

This is one good feature of the plan. But it also contains the danger of flattening down, because the content of the ceremony tends to become the same after several performances. So new material must be injected or some other ceremony used to be the important thing in the lives of the working group, perhaps something which will reflect back, and bring new material into the rating ceremonies.

The construction crew job in the erection was an excellent example of a dramatic incident in which a group of workmen acted, so to speak, as players in a playlet, with an audience

which at least consisted of the other construction men. This was good, and points to the fact that such occasional incidents have a use as dramatic incidents, but this ought not to be interpreted as meaning that all construction work need be worked out along the same lines.

Dramas

There is no reason why these dramas should not be deliberately planned or produced, not as artificial things not growing out of the needs of the groups but as ways of doing things which could and probably are now done in ways which have no satisfying dramatic participating aspects.

Doubtless such occasions could be found in the work of the operating crews, and if due thought is given to the matter, to the maintenance gangs.

It is quite probable that if this were done, incidents that happen during these events such as the degree of participation, mistakes made, etc., would enter into the discussions of rating trios and give that ceremony new subject matter for each occasion.

Three Levels of Thought

One of the interesting things noted was a difference in what might be called the conceptual structure or understanding of different levels in the plant as to what was going on. This is quite important to understand in developing the plan further.

The workers and the foremen seemed not to think beyond the idea of periodic ratings. The men said, "It is fair that you should rate our work, and fair that we should know what our rating is." The foremen also speak in terms of evaluating the men's work. And that is as far as those on this level think.

When talking to supervisors and superintendents, the intermediate levels of supervision, the evaluating concept was of course mentioned, but they were thinking in broader terms, increasing the foreman's knowledge of the men and their work, and the workman's increase in knowledge of his job, and so on. In other words their conceptual thinking was in different terms from those of the foremen and workers.

Supervisor Out of Line

An interesting example of this difference in viewpoint was the action of a supervisor who has been recently promoted from foreman. He was not satisfied that one of his foreman had done a sound job of evaluating his men, so after the forms had been agreed to by foreman and shop steward he wrote in his comments on the value of the men's work. In doing this he betrayed the fact that he was still thinking as a foreman that the important thing about the scheme was the written record of the foreman's rating.

His fellow supervisors, in cases where they did not think the foreman was courageous enough in his rating, took the attitude that what was on the paper was not the most important thing, but the opportu-

nity that was being provided for the foreman and worker to get to understand each other's jobs. They therefore took no action in regard to the paper record but talked about how they could aid these foremen in getting such understanding.

When we came to the manager, we found that he was speaking all the time of the cooperative plan, which had been agreed upon by him and the union officials.

Here again we see a broader concept of what is going on, with top management viewing the present scheme as only an instrument for improving and maintaining an improved morale, for greater plant efficiency, and to increase the happiness and enrich the lives of the workers.

Keep All Three Occupied

These three levels are important to remember. In planning an extension of the plan, or ways and means of continuing it, all three levels should be kept occupied. At present with the periodic ratings in which the men and the foremen are active, they are fully occupied, and perhaps would look upon any further step as something to be resented saying "You have just introduced something new, and we like it and are interested. Why do you want to come along with some other new idea to upset this plan just when we are getting used to it?"

On the other hand the labor leaders who participated in the negotiations for the setting up of the present machinery, and who think on the same broad terms as the manager, are not directly concerned with the actual workings of it. How can their interest be kept alive, while the men and shop-stewards are interested in the present machinery and can't be moved along too fast. To the leaders and top management the next step would not be something new but just a continuation of the present plan. But to the foremen and workers, with a narrower concept it would be something entirely different.

Perhaps management might interest union leaders in a review and appraisal of the present plan, and ask their aid in improving the parts of it that are not working well, for instance, work which statistical controls show is generally below standard in a particular craft or crafts. Or it might get them working on some such matter as improving or setting standards for admission to membership in their crafts.

This latter idea would not affect the daily workings of their members, who are getting used to the new scheme, but would fill in the time gap for the union officials, and keep them thinking and working on cooperation. Then when the time comes for the next step that will affect all the men, and be an outgrowth of the present machinery they will be ready to help in planning it.

Ten Years Ago Bingham and Slocombe Proved That Repeaters Cause Most Automobile Deaths but Can be Cured. Ever Since Many Agencies Have Wrangled Over This Theory, While 333,000 People Died on the Highways. What About the Next Decade?

Will the Slaughter Go On?

By Personnel Research Federation

THE automobile accident situation is at a stage where introduction of some new techniques of accident prevention, on a nationwide basis, would seem desirable.

At the present writing, certain preventive methods have become fairly well standardized. States have copied the methods of other states.

Certain procedures of accident prevention have been eliminated as not producing the desired results. Other procedures have been universally adopted.

It is now believed, however, that if much more progress is to be made in cutting the fearful death and injury toll on our highways, and in eliminating some of the hundreds of millions of dollars of annual economic loss from motor accidents, some entirely new methods must be introduced.

It is believed that the most effective new technique that could be applied would be a new technique for dealing with the accident repeater.

It might be of interest to state at this point that in certain cities, where a plan for controlling these repeaters was tried out, as a brief experiment, a cut of 40 per cent in accidents was effected immediately.

In the rest of this article, by answering a number of questions, we shall explain briefly what the accident repeater is, and tell why we believe the repeater can be cured to the vast benefit of the nation.

What Is a Repeater?

A repeater is a person who has many accidents. They are sometimes called accident-prone or accident-susceptible or multiple-accident

men. Repeaters may be divided into the following classes:

(1) Those who have accidents because of youth and inexperience. Figures show that the highest frequency of repeaters occurs in the age group 20 to 25.

(2) Those who lack driving ability because they have never been taught properly, and are incapable of learning from their own experience. This group probably make up the bulk of repeaters. They include "kinkers," who are persons who drive well in all respects except for a weakness, "kink," or peculiarity.

(3) Those who drive poorly due to old age, poor sight, ill health, or general physical or mental incapacity.

(4) Irresponsible and reckless people with little sense of courtesy or consideration for other citizens.

(5) Wilful lawbreakers.

The Youthful Type

A boy of 19 had two accidents in two months. In the first he went up a short blind street with a light delivery wagon to deliver bread. Instead of turning around to come out, he backed out. Some small boys were playing marbles in the mouth of the street, and one of his rear wheels passed over the stomach of one of the boys injuring him so that he had to be sent to the hospital.

In his second accident, he was driving a car along a narrow country road, and on swinging round a curve where the view was obstructed by a stone wall, he collided with a car coming in the opposite direction. He had a girl with him at the time. His attitude, on being interviewed, was that of a typical callow youth who did not think much, and liked to show off to his girl friends.

A Kinkers with Winter Accidents

John Jones. Age 33. Driving Experience 10 years.

December—Car skidded on straight road, going off into ditch. Road icy.

January—Driver lost control of car, so that it collided with car coming opposite direction. Snowing.

December—Collision at intersection. Could not stop owing to icy road. Snow and sleet obscured vision.

March—Collision with pedestrian at intersection weather conditions unknown.

May—Car skidded into telegraph pole. Road newly tarred. Wet and raining.

October—Car went off road at curve. Wet and foggy.

November—Car skidded on straight road. Snowing.

January—Car skidded into bus which had stopped. Road icy.

This is the simplest case of an accident repeater, who not only has many accidents but who actually repeats the same type of accident over and over again.

Physical or Mental Incapacity

Mr. A. is a dentist. He is 68 years old and has had nine accidents in the past nine years. Two of these occurred while he was passing another car on the open road. Both of them were due to lack of judgment of distance. Mr. A. had three accidents at intersections.

In the first two he was coming from the right and it seems that he hesitated so long that the other driver thought he was waiting and went ahead. The third time he came out of a side street to turn left and struck a car coming from the right. Another time he was hit in the rear when stopping suddenly at a railroad crossing for the gates.

Two Skids

Mr. A. has had two skidding accidents. In the first of these he skidded when stopping for a trolley, and sideswiped another car coming from the opposite direction. In the second incident he skidded into the rear end of a car ahead of him which had stopped to allow him to pass before turning left into a drive. At another time Mr. A. struck a man who had run out from the sidewalk in front of his car.

In not one case has Mr. A.'s accidents been due to carelessness or wilful speeding, but to his inability to operate. In case Mr. A. does know how to drive he is not able to react quickly enough to do so properly, and when a man does stop and look and even then cannot see cars approaching, he not only places himself in extreme danger but every other driver or pedestrian he meets on the road.

An Irresponsible

Mr. E. is a truck driver. During the nine years he has ammassed his imposing record of eight accidents he has worked for at least six different companies, and consequently has never had long experience on any of the trucks he has used. Mr. E. has four young children, and once managed to regain his license on the strength of its being the only means of supporting his family.

Four of Mr. E.'s accidents took place in blind alleys or driveways. His first two accidents occurred as he was coming out of driveways, and drove directly into the paths of cars approaching from the left fifty or sventy-five feet away. In both cases Mr. E. admits having seen the car before he drove out. The third collision took place, when depending upon a helper, Mr. E. backing out of a driveway, struck a mail truck, throwing it over an embankment, and seriously injuring the driver. His fourth accident of this nature occurred when, on the wrong side of the street, he was waiting for an approaching car to pass so he could turn into the driveway on the right. His truck rolled into the other car as it passed.

INTERSECTION TROUBLES

The rest of Mr. E.'s accidents took place at intersections. The first two of these occurred when he was approaching intersections so fast that he could not stop before striking cars which had already entered from the right. The third accident at cross-roads was brought about when Mr. E. pulled to the extreme right before turning left into a side street and his truck hit a car which was attempting to pass him from behind. Another time, with the green light in his favor, Mr. E. attempted to turn left ahead of a car coming straight through from the opposite direction. His truck hit the left side of the approaching car.

Mr. E. has said that he has not the slightest idea how his accidents have happened and he feels certain that for only one is he to blame. It is quite easy to definitely sum up Mr. E.'s driving faults. He does not know how to go in and out of driveways nor how to make a turn at an intersection. Speed is undoubtedly another factor.

It requires no imagination to accept his statement that he does not know why his accidents happen. The death Mr. E. is about to be responsible for can be traced to two causes, his own ignorance as to how to properly operate an automobile, and the failure of someone else to properly instruct him.

A Lawbreaker

Mr. M. has had two fatalities. His first fatality took place in April of 1921 when he killed a young boy playing on the streets. Mr. M.'s previous record can only be surmised for up to this time, a license had never been issued to him. In October of the same year

he received his first license and almost immediately commenced his serious work of destruction at which he was to be so overwhelmingly successful for the following eight years.

In May, 1922, his license was revoked for running away from the scene of an accident, and was returned to him in two month's time after a checking up of his record and reputation from the local police chief. Five months later he was in court for operating a truck without a mirror, and in April of 1923 he paid a substantial fine for once more leaving the scene of an accident. Two months later he was fined ten dollars for speeding, and within another period of two months his license was suspended when he was found to have been at serious fault in another accident.

Goes to Jail

One month later he was fined one hundred dollars for operating a car after the suspension of his license. Within a month he was once more charged with the same offense and as a result spent ten days in the House of Correction. A license was not issued again to Mr. M. until March of 1925. For three years Mr. M. does not appear on our records. In the latter part of 1928 he again appears striking a boy upon a bicycle in October of that year. In December his license was suspended for ten days on a speeding complaint from a state police officer. Two weeks after his license was returned to him his second fatality took place.

On January 23, 1929, he struck and killed a college girl who was riding a bicycle ahead of his truck. The accident took place in the evening but the lighting was extremely good, and in every conceivable way Mr. M. was grievously at fault. Three months later Mr. M. paid a fine of two hundred dollars for operating so as to endanger. At this time his license was again revoked, and during the month of January, 1930, Mr. M. spent thirty days in the House of Correction for driving an automobile after his license had been suspended.

This eight year record of Mr. M.'s, remarkable as it is, is all the more remarkable when one considers that he was only responsible for two deaths.

How Many Repeaters Are There?

The following table, based on a study of 7000 drivers' five-year records would indicate that 4.5 per cent of the drivers in a state had 30.5 per cent of the accidents:

Table of Repeaters

NUMBER OF ACCIDENTS PER DRIVER	NUMBER OF DRIVERS	NUMBER OF ACCIDENTS
0	251,000	
1	96,600	96,600
2	32,600	65,200
3	12,000	36,000
4	4,000	16,000
5	800	4,000
6	200	1,200
8	400	3,200
More than 8	800	10,800
Totals.....	400,000	233,000

The table shows that there appear to be 18,200 repeaters in this state, and that in five years they had 71,000 accidents. It is certain, however, that the actual number of repeaters, and the actual number of accidents they have had run to even larger figures, because many repeaters do not report accidents, although they are compelled by law to do so.

This situation was illustrated in another state where by setting up a full recording system, by gaining the co-operation of local police depart-

ments in reporting accidents, by use of newspaper clipping services, and by giving publicity to the fact that the legal penalty for not reporting accidents was suspension of license, found even more than the expected number of repeaters.

We estimate that 15 per cent of the total number of automobile drivers constitute the repeater class, and that these 15 per cent have 70 per cent of the accidents, and certainly not less than 10 per cent of drivers have at least 60 per cent of the accidents.

Are Repeaters the Root Problem?

Every study that has been made of the street and highway accident problem in the last 10 years has led to the conclusion that repeaters are the main root stem of the problem, though there are other feeder roots.

The following facts are of interest:

(1) The first published study pointing to the importance of repeaters in accident causation was that by E. M. Newbold of the British Industrial Fatigue Research Board in 1926. Newbold analysed very completely the accident records of workers in English munition factories, and by exhaustive statistical methods proved that the majority of accidents in these factories were caused by the presence of accident-susceptible workers.

(2) In 1926, the Personnel Research Federation was engaged to determine the causes of accidents among bus drivers and street car motormen in Boston. We analysed the records and found that without question there were accident-prone men among the drivers, and that the company could not substantially reduce its accident bill unless and until it devised ways and means of curing these men of their accident habits. When the Newbold report was available in America, we applied the statistical formulae therein to the Boston street accident figures, and confirmed our empirical finding that repeaters were the root of the Boston problem.

Results through Repeater Control

(3) During the next five years, 1927 to 1931, we developed and applied measures for curing the Boston repeaters of their accident tendencies, and reduced the public accidents from 8500 a year to 3500 a year. The company has since continued the methods developed, and has effected further reductions in its accidents, four times winning the Brady Award as the Company which has done the best job of improving its own safety record.

(4) In 1928, the Traffic and Safety Committee of the American Transit Association made a study of accidents among operators of 32 transportation companies scattered throughout the United States, and found that repeaters were the main problem of these companies.

(5) In the same year, the Metropolitan Life Insurance Company made an intensive study of bus and other drivers of the Cleveland Railway Company, and also found that the

basic problem of the company was the repeater.

(6) In 1929, through the co-operation of Dr. Miller McClintock, Director of the Harvard Bureau of Traffic Research and Vice-President for Public Safety of the National Safety Council, we made a preliminary study of the records of 100 automobile drivers, who had been involved in fatal accidents, to see if they showed any signs of being accident-prone. These 100 operators who had fatal accidents had previously had:

3 fatal accidents.
38 other accidents.
56 court convictions for improper operation.
20 revocations or suspensions of license.
5 convictions for driving under the influence of liquor.
6 police records for larceny, bootlegging, etc.

While this investigation was limited in its scope, it did indicate very definitely that many drivers who become involved in fatal accidents are persons who habitually drive in an improper or dangerous manner.

Yale Study

(7) In 1931, the Yale Institute of Human Relations made a study in the Connecticut Motor Vehicle Bureau to determine if repeaters were the cause of auto accidents. We were retained to direct the study, working with the advice and assistance of a committee comprising Dr. Albert W. Whitney, associate director of the National Bureau of Casualty and Surety Underwriters, Dr. Mark May, Executive Secretary Yale Institute of Human Relations, and Mr. Robbins B. Stoeckel, Commissioner of Motor Vehicles for the State of Connecticut. In this study, the records of 5000 Connecticut drivers, for the five years 1926 to 1931 were carefully examined and analyzed. They form the basis of the figures quoted above, and show definitely the presence in the state of a large number of repeaters.

A second part of this study was to analyse the records of another 2000 drivers to see whether repeaters keep on having accidents or whether they have them only when they run into spots of bad luck. This second study showed that, over a five year period, good drivers consistently drive well, and have few accidents, but that poor drivers remain poor and continually have accidents. In other words, it is possible to forecast with reasonable accuracy the number of accidents a poor repeating driver will have, *unless he is cured.*

Many Agencies Say "Yes"

(8) In 1935 Congress made an appropriation for the United States Bureau of Public Roads to make a study of repeaters. The Bureau turned the money over to the Highway Research Board of the National Research Council, to make the study. The director of the study, has made an independent check and statistical analysis of previous researches. In addition, he has directed an analysis of the records of 40,000 Connecticut drivers for the five years from 1931 to 1936. He has found that in every case the presence of repeaters is evi-

dent as the major cause of accidents. And his independent study of the 40,000 Connecticut drivers has in general confirmed our findings on number of repeaters in the state for the previous five years.

Thus there is incontrovertible evidence, from 10 years of study by many reliable agencies, that repeaters are the main root of the automobile accident problem. But during this decade of study, although some 300,000 persons have been killed by automobiles, nothing practical has been done (except on an experimental scale locally) to get at the root of the matter by curing repeaters. The time has now arrived to use the information available, to begin an effective remedial program.

It is Hoped That a Substantial Number of Industrial and Business Personnel Men Will Become Members of the American College Personnel Association.

Personnel Work in Colleges

By Forrest H. Kirkpatrick
Bethany College

The adoption of a comprehensive charter for college personnel work and the reconstruction of its constitution were signal accomplishments of the American College Personnel Association at its annual meeting in Atlantic City, February 23 to 26. The constitution states that the purpose of the organization is to provide for the co-operative association of those persons engaged in student personnel service and its administration in colleges or universities, to promote national and regional conferences for the discussion of personnel problems and issues, to formulate and to encourage personnel research, and to disseminate the "personnel point of view" among all educational workers. Membership in the association is open to all persons "engaged in any aspect of non-profit-making student personnel service, administration, or research at the college level" and also to personnel workers in business and industry interested in affiliation who may be approved by the Executive Council of the Association. It is hoped that the membership in the American College Personnel Association will eventually include a substantial number of industrial and business personnel officers.

American Council Report

The charter was drawn up by the Commission on Reorganization of the American College Personnel Association headed by Dr. C. Gilbert Wrenn of the University of Minnesota with Dr. Esther Lloyd Jones of Columbia University, and Dr. Karl Onthank of the University of Oregon working with them. The Commission used as basic material certain sections of a report of a Conference on College Personnel Work called by the American Council on Education, and meeting in Washington, D. C., April 16 and 17, 1937. In presenting the

report for the Commission Dr. Wrenn explained that certain conclusions of the April Conference were so fundamental that they were adopted rather liberally in the formulation of the Charter.

It is intended that the Charter will assist members of the Association to become more conscious of personnel work as a whole and to interpret for all persons in business or education the philosophy and development of college personnel work. In discussing "the student personnel point of view" the Charter begins as follows:

"A philosophy of education that is in harmony with modern concepts of psychology and related sciences imposes upon educational institutions the obligation to consider the student as a whole—his intellectual capacity and achievement, his emotional make-up, his physical condition, his social relationships, his vocational aptitudes and skills, his moral and religious values, his economic resources, his aesthetic appreciations. It puts emphasis, in brief, upon the development of the student as a person rather than upon his intellectual training alone."

"Personnel work is not new. Personnel officers have been appointed throughout the colleges and universities of the country to undertake a number of educational responsibilities which were once entirely assumed by teaching faculty members. They have also, because of the expansion of educational functions, developed a number of student personnel services which have but recently been stressed. The philosophy behind their work, however, is as old as education itself."

Personnel Work in Colleges

The various personnel functions or services in colleges and universities are listed and described by the charter in terms of broad units which might be considered as administrative areas or as broadly functional in viewpoint. Such functions or services as the following are included: selection and admission of students, orientation of new students, diagnosis and counseling of students, mental and physical hygiene, provision and integration of student activities and interest, supervision of living arrangements, maintenance of personnel records, and student employment, placement and follow-up. There is this healthy note of caution in the discussion of these personnel services:

"Throughout this section, the self-determination and progressive self-realization of the student should be considered the goal of personnel work. It would be unfortunate to think of these functions as merely dealing *with* the student since the active process of his growth in self-determination is the reason for their existence."

Much attention is given in the Charter to student personnel administration. The co-ordination of all personnel services in an institution, the co-ordination with instructional activities and staff, the co-ordination with the business management, and the co-ordination with pre-college guidance and follow-up of alumni are all discussed. Great emphasis is put upon personnel research and those who were responsible for the Charter spoke of it as "the life blood of the student personnel movement." This is how the Charter puts it:

"The good administrator will recognize the vital importance of evaluation and provide for a research staff, or for a functioning staff, trained for research as well as for personnel service. The good counselor will depend as much upon research work for the discovery of new and proved techniques as does the good physician upon his medical journals and laboratory investigations. He will use these techniques with no more assurance that they are fixed and final than has the medical clinician or modern physicist that his concepts and techniques will never change. One of the major responsibilities of the personnel worker is to define problems in various areas requiring investigation."

It would seem that the charter of the American College Personnel Association and the new constitution for the association have arrived on the scene at an appropriate time for there is much loose talk about college personnel work. And many there are who have acquired the vocabulary but not the insight. In succinct terms the Charter gives something of the philosophy, purpose, and functioning of college personnel work as envisioned by the American College Personnel Association. In the light of its own thinking college personnel work has "staked its claim."

* * *

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Book Review

TOXICITY OF INDUSTRIAL ORGANIC SOLVENTS; SUMMARIES OF PUBLISHED WORK

By E. Browning. Report No. 80 of the Medical Research Council, Industrial Health Research Board (obtainable at the British Library of Information, New York Price $2.15. 396 pp.

Reviewed by FREDERICK B. FLINN

The Medical Research Council at a request from the Home Office appointed a Committee to investigate the possibility of various volatile substances having injurious effects upon the health of workers using them under industrious conditions.

Acting under the direction of this Committee Dr. Ethel Browning made a survey of the available literature up to and through 1935. In her introduction she calls attention to the difficulty of translating the reported experimental results on animals to man. She emphasized the fact that one cannot draw conclusions as to the toxic dose for man from animal work.

Nearly a hundred substances are dealt with in this report. They can be divided as follows: (1) the hydrocarbons, (2) the chloro compounds, (3) the alcohols, (4) the esters, (5) the cyclohexane derivatives, (6) the ketones, (7) the glycol group, and (8) a miscellaneous group including CS_2, pyridine, ethyl ether, and isopropyl ether. The properties, uses and toxic effects of each compound are set out, and the appropriate references to the literature come at the end of each section.

Dr. Browning has done a very credible job and the information she has gathered is very valuable for the industrial doctor, hygienist and student.

PERSONALITY, A PSYCHOLOGICAL INTERPRETATION

By Gordon W. Allport. New York: Henry Holt & Company, 1937. 566 pp. Price $3.50

Reviewed by DORIS D. HAY

In a delightfully casual style, reminiscent of his class-room at Harvard, where he is assistant professor of psychology, Gordon Allport writes this survey of the new movement which he calls the Psychology of the Personality.

Fifteen years in the making, this many sided presentation begins with a chapter of definitions of 'Personality' from the earliest times to the present, ending with his own comprehensive definition: "Personality is the dynamic organization within the individual, of those psychophysical systems that determine his unique adjustments to his environment."

Another chapter is a History of

Characterology which includes accounts of Phrenology, Physiognomy and Ethnology. After the introductory chapters, the growth of the personality from birth to maturity is covered, with much material on motives, mechanisms, traits and attitudes, transfer and insight, as studied and explained by the various schools of psychology: Psychoanalytical, Behavioristic, Gestalt, etc.

Although this book was probably intended primarily as a college textbook, Personnel Workers will find useful material in later chapters on methods of personality evaluation, directions for preparation of case studies, charting of traits, as well as principles of rating and testing, interviewing and judging people.

With many cross-references and illuminating foot-notes, a subject and also a name Index, this book should be useful to any student of psychology and especially good as a refresher for a busy person wanting to brush up.